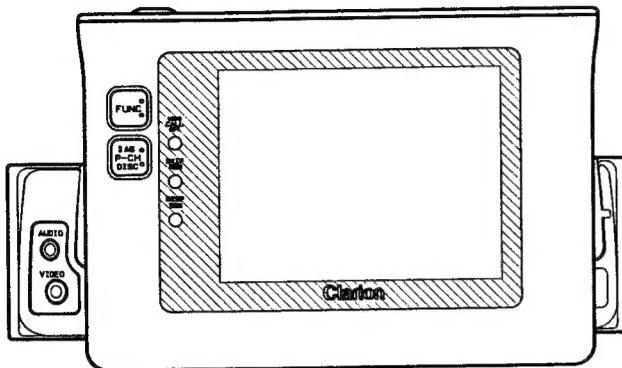


clarion Service Manual

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CLAR-00366



CAR COLOR LCD TV / VISUAL AUDIO CENTER UNIT

Model **TVX4151**
(QZ-1113K)

■SPECIFICATIONS

Screen size	:4"(82mm width×62mm height)
Display method	:Transmission type TN LCD
Drive method	:TFT active matrix driving
Pixels	:112,086(470×234)
Tuning	:PLL synthesizer
Reception channels	:VHF-2 to 12(CCIR channels) 1 to 11(NZ channels) A to H2(Italian channels) UHF-21 to 69(CCIR channels)
Reception method	:PAL-B/G
Intermediate frequencies	:Video;38.9MHz Audio;33.4MHz (5.5MHz intercarrier)
Antenna input	:75Ω,unbalanced
VTR video input	:1.0±0.2Vp-p (input impedance 75Ω) :φ 3.5 mini-jacks
VTR audio input	:130±60mVrms (input impedance 45kΩ or greater) :φ 3.5 mini-jacks
Power source voltage	:DC 13.2V(10.8 15.6V)
Power consumption	:1.5A or less
Weight	:Approx. 1.4kg
External dimensions	:178(W)×50(H)×156(D)mm

■COMPONENTS

●QZ-1113K-A		
Main unit	—	1
Remote controller	RCB-103-300	1
Battery(CR2025)	—	1
Mounting bracket	300-9519-00	1
Escutcheon	370-5210-00	1
Extension lead	854-3916-00	1
Parts bag	921-9299-00	1
Electro tap	060-0018-00	7
Mounting bracket	300-9511-02	2
Lead holder	335-0833-01	2
Spacer	345-3653-01	1
Machine screw(M2.6×4)	714-2604-11	4
Machine screw(M5×8)	714-5008-41	2
Rear bolt	716-1567-00	1

*For improvement purposes, specifications and design are subject to change without prior notice.

■ FEATURES

● 4-inch Color LCD

The TVX4151 uses a 4-inch TFT active matrix drive type color LCD (Liquid Crystal Display) panel providing powerful pictures.

● Various Tuning Methods

TV stations can be tuned in easily using preset tuning tuning(six stations each for VHF and UHF)manual tuning, and auto tuning.

● Push Up/Down Operation for Good Operability

A push up/down operation is used to adjust the brightness and color density so the picture can be easily adjusted to suit your tastes.

● Designed for Driving Safety

- The liquid crystal panel is automatically drawn back into the main unit after approximately 10 seconds if it is pulled out and left in the horizontal position.

- To prevent accidents, the picture turns off and only the sound can be heard when the car is moving.

- The LCD panel can be adjusted freely (stepless) to any angle between vertical and 45°.

● Built-in FM Modulator

The TVX4151 includes a built-in FM modulator so it can easily be connected to FM radios (combination units).

■ CD AUTO CHANGER DISPLAY SCREEN ERROR MODE TABLE

Error display	Name of error	Description
ERROR-1	Memory error	This error occurs if the disc loading data,etc.,is lost due to wear of the CD auto changer's battery.(insert an empty magazine and eject it to return to the first disc.) Note: Remove all the discs from the magazine,insert the empty magazine and press the eject key.
ERROR-2	Mechanical error	This error occurs if there is a problem with the mechanism and the eject or disc selection operation is not completed in the specified amount of time.(Have the CD auto changer serviced.)
ERROR-3	Functional error	This error occurs if the pickup cannot focus after several tries due to scratches on the disc,signal interference,etc.(Replace the disc.)
ERROR-5	Data disc	This error occurs if a CD-ROM or other data disc is inserted. "ERROR-5" is displayed for 5 seconds, and the next disc is selected.
ERROR-6	Disc error	This error occurs when the disc is loaded upside-down,etc. "ERROR-6" is displayed for 5 seconds, and the next disc is selected.(Reload the disc properly.)
HI-TEMP	Temperature error	This error occurs when the CD mechanism's temperature sensor detects that the temperature is high. Wait until the temperature returns to normal to play discs.

■ SETTING THE COUNTRY RECEPTION MODE

Broadcast channels differ from country to country. Use the following procedure to set the broadcast channels for the country to be received.

1. Press the FUNC button and the MEMO/Channel CALL/RPT button simultaneously for at least 5 seconds.

(The country reception mode setting screen appears. The mode is set to "1 singapore" upon shipment from the factory.)

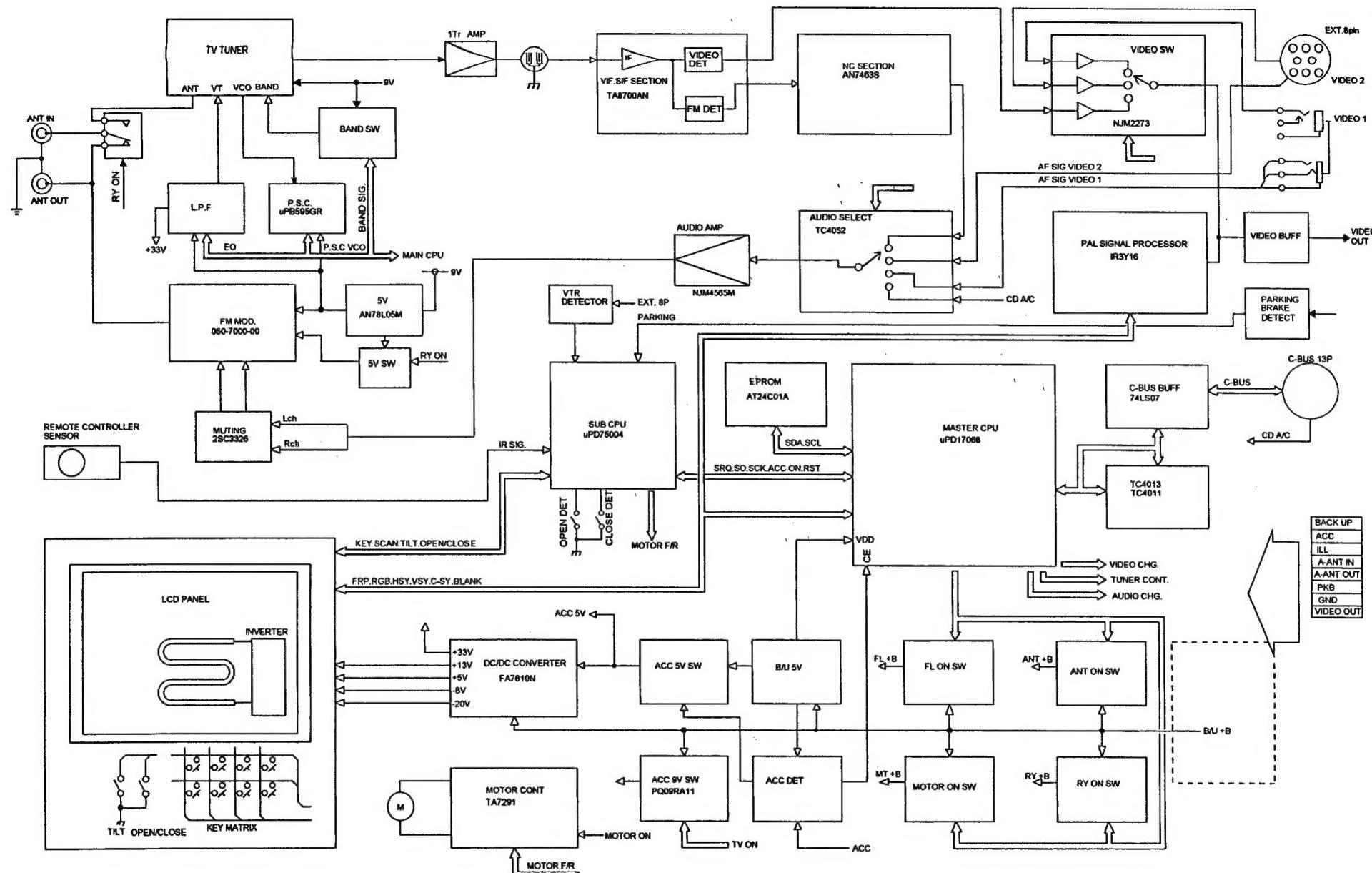
2. Use the UP/DOWN buttons to display the country to be received.

Display		
1 SINGAPORE	17 AUSTRIA	33 BAHRAIN
2 INDONESIA	18 NETHERLAND	34 JORDAN
3 THAILAND	19 SWISS	35 ALGERIA
4 MALAYSIA	20 SPAIN	36 UGANDA
5 SRILANKA	21 GERMANY	37 GHANA
6 PAKISTAN	22 BELGIUM	38 ZAMBIA
7 MOLVIDES	23 PORTUGAL	39 NIGERIA
8 INDIA	24 AFGHANISTAN	40 LIBERIA
9 BOSNIA I H.	25 U.ARAB E.	41 SIERRA LEONE
10 SLOVENIJA	26 YEMEN	42 KENYA
11 MAKEDONIJA	27 ISRAEL	43 SUDAN
12 ICELAND	28 OMAN	44 ITALY
13 SWEDEN	29 QATAR	45 ALBANIA
14 DENMARK	30 CYPRUS	46 NEW ZEALAND
15 NORWAY	31 KUWAIT	
16 FINLAND	32 TURKEY	

3. Press the DISP/SCAN button.

The reception mode for the selected country is set the previous screen reappears.

BLOCK DIAGRAM



EXPLANATION OF IC

■ μPD75004GB-F90-3B4 052-6009-10 1 DIN TV controller (slave microcomputer)

Outward Form

44-pin plastic QFP

Terminal Description

Pin No.	Symbol	I/O	Function
1	BEEP	I	BEEP ENABLE input terminal (H : ENABLE)
2	PKB	I	Parking brake input terminal (L : PKB OFF)
3	OPEN	I	Emission limit detection SW input terminal (L : SW ON emission end)
4	KI 3 5 7	I	Key scan input terminal
8	NC	-	Not used
9	VTR ON	I	VTR connection input terminal (H : VTR connection ON)
10	SEL 2	-	Not used (GND connection)
11	SEL 1	-	
12	NC	-	Not in use
13	KO2 5 16	O	Key scan output terminal
17	GND	-	GND terminal
18	XT 1	-	Crystal connection terminal for slave microcomputer clock signal generation
19	XT 2	-	
20	RESET	I	RESET input terminal
21	X 1	-	Crystal connection terminal for main microcomputer clock signal generation
22	X 2	-	
23	NC	-	Not used
24	MOTOR R	O	MOTOR R output terminal
25	MOTOR F	O	MOTOR F output terminal
26	MOTOR ON	O	MOTOR power supply output terminal
27	NC	-	Not used
28	DSR	O	DATA SET READY output terminal
29	NC	-	Not used
30	SO	O	Serial data output terminal
31	SCK	I	Serial clock input terminal
32	SPEED	I	Speed pulse input terminal
33	ACC ON	I	ACC ON detection input terminal (H : ACC ON)
34	NC	-	Not used
35	TILT SW	I	Tilt detection SW input terminal (H : horizontal, L : lean)
36	OP/CL SW	I	OPEN/CLOSE key input terminal (SW ON in fall)
37	REM0CON	I	Remote control input terminal
38	NC	-	Not used
39	VDD	-	+5V power supply voltage terminal
40	NC	-	
41	NC	-	Not used
42	BUZ	O	Beep tone output terminal
43	CLOSE detection	I	Storage limit detection SW input terminal (L : SW ON storage end)

Key Matrix Table

KEY OUT	KEY IN	KI 0 (7pin)	KI 1 (8pin)	KI 2 (9pin)	KI 3 (10pin)
KO 0 (16pin)	MEMO CALL RPT	DISP SCN	DOWN	SKIP RDM	
KO 1 (15pin)	UP	P CH DISC AS	FUNC	—	
KO 2 (14pin)	—	—	—	—	

■ μPD17068GF-E22-3BA 052-6008-10 1 DIN TV controller (master microcomputer)

Outward Form

100-pin plastic QFP

Terminal Description

Pin No.	Symbol	I/O	Function
1	NC	-	Not used
2	FF reset	O	C-BUS FF reset
3	FF set	O	C-BUS FF set
4	INTO	-	Connect to GND
5	NC	-	Not used
6	TEST PIN	I	When +B is reset, EEPROM initialize detection terminal
7	NC	-	Not used
9	CBS srq	I	SRQ input terminal of C-BUS
11	NC	-	Not used
12	UB HB LB	O	Switching output of TV tuner frequency band
13			LB HB UB BAND
14			H H L UHF
18			H L H VHF-H
			L H H VHF-L
15	NC	-	Not used
17			
19	CBS CONT	O	C-BUS ACC CONT
20	NC	-	Not used
21	BEEP en	O	BEEP sound, allowable
22	NC	-	Not used
23			
24	CBS si	I	Data input terminal of C-BUS
25	CBS so	O	Data output terminal of C-BUS
26	CBS sck	O	Clock terminal of C-BUS
27	NC	-	Not used
28	GND		GND terminal
29	OSC out		
30	OSC in		
31	OSD r		
32	OSD g	O	Character signal output terminal
34	OSD b		Character data output terminal for R, G, B, BLANK
35	OSD blk		
33	NC	-	Not used
36	H SYNC	I	Horizontal synchronizing signal input terminal
37	NC	-	Not used
38	V SYNC	I	Vertical synchronizing signal input terminal
39	C sync	I	Input terminal of horizontal synchronizing signal counter
40	NC	-	Not used
41			
42	DSR	I	DSR input from slave microcomputer
43	NC	-	Not used
44			
45	SLV si	I	Serial data input from slave microcomputer
46	CLAMP	O	Constant switching circuit control output for clamp (H for TV)
47	SLV sck	O	Serial clock signal output to slave microcomputer
48	NC	-	Not used
49	EEP scl	O	EEPROM CLK
50	EEP sda	I/O	EEPROM DATA

Pin No.	Symbol	I/O	Function															
51	A chg2	O	Switching of voice output															
52	A chg1		<table border="1"> <tr> <td>Voice output</td> <td>CD</td> <td>VTR 2</td> <td>VTR 1</td> <td>TV</td> </tr> <tr> <td>52 pin</td> <td>L</td> <td>L</td> <td>H</td> <td>H</td> </tr> <tr> <td>51 pin</td> <td>L</td> <td>H</td> <td>L</td> <td>H</td> </tr> </table>	Voice output	CD	VTR 2	VTR 1	TV	52 pin	L	L	H	H	51 pin	L	H	L	H
Voice output	CD	VTR 2	VTR 1	TV														
52 pin	L	L	H	H														
51 pin	L	H	L	H														
53	M-ANT	O	Motor antenna ON															
54	MPU reset	O	Reset port control output of slave microcomputer															
55	NC	-	Not used															
56	RY on	O	Antenna switching relay ON															
57	NC	-	Not used															
59	NC	-	Not used															
60	COL	O	PWM output for color density adjustment															
61	NC	-	Not used															
62	BRT	O	PWM output for brightness adjustment															
63	NC	-	Not used															
64	ACC on	O	ACC ON output to slave microcomputer															
65	NC	-	Not used															
67	NC	-	Not used															
68	V chg2	O	Switching of image source															
70	V chg1		<table border="1"> <tr> <td>Image output</td> <td>CD</td> <td>VTR 2</td> <td>VTR 1</td> <td>TV</td> </tr> <tr> <td>70 pin</td> <td>L</td> <td>L</td> <td>H</td> <td>H</td> </tr> <tr> <td>68 pin</td> <td>L</td> <td>H</td> <td>L</td> <td>H</td> </tr> </table>	Image output	CD	VTR 2	VTR 1	TV	70 pin	L	L	H	H	68 pin	L	H	L	H
Image output	CD	VTR 2	VTR 1	TV														
70 pin	L	L	H	H														
68 pin	L	H	L	H														

Pin No.	Symbol	I/O	Function
69			
71	NC	-	Not used
73			
74	A mute	O	Sound mute
75	V mute	O	Image mute
76	NC	-	Not used
77	FL on	O	LCD back light ON
78	TV on	O	TV tuner ON
79	SEL 4	I	Specification setting port (set to L)
81	SEL 1		Priority of last selection=L / Automatic return=H
82			Blue back=L / Black back=H
83	INT 1	-	Connection to VDD
84	X out	-	Crystal connection terminal for main clock signal
85	X in		
86	VDD 0	-	+5V power voltage terminal
87	VDD 1		
88	NC	-	Not used
93			
94	GND 1	-	GND terminal
95	GND 2		
96	VCO	I	PLL VCO input
97	EO	O	PLL error output
98	PSC	O	PLL prescaler control output
99	ACC in	I	Input terminal of ACC ON/OFF
100	NC	-	Not used

■ ADJUSTMENT

1. Adjustment of screen horizontal position

Adjust the H-POS control before assembly of the LCD panel.

Set the LCD panel on the fixture and display the monoscope pattern. Adjust the H-POS control so that the image is centered.

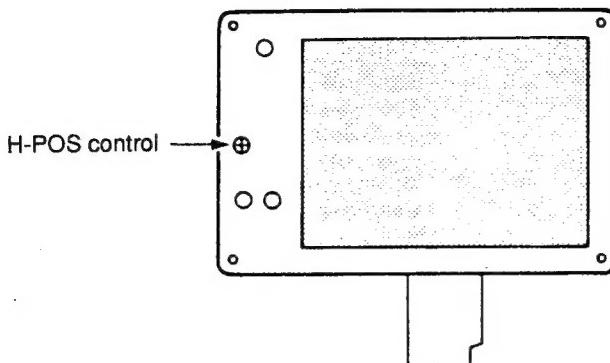


Fig. 1

2. Adjustment of DC-DC converter

1) Measurement of oscillation frequency

Measure the oscillation frequency of No. 4 pin of IC802 (FA7610N) at test point F. TP.

Check that the oscillation frequency is within 100 KHz±15 KHz.

2) Adjustment of output voltage (VR802)

Connect the DC voltmeter to test point 5V. TP.

Adjust the VR 802 so that the voltage is +5V±0.1V.

3) Output voltage of DC-DC converter

Check that the voltage at each point is as follows.

J851 (FPC connector)	No. 18 pin	+14V±0.5V
	No. 19 pin	-20V±1.0V
	No. 25 pin	-8V±0.5V
+ terminal on C111 (35V-22)		+34V±1.0V

3. Adjustment of equipment for tuner/IF

1) Voltage at tuner pack terminal

Check the voltage at the power terminal of the tuner pack for each band.

Terminal/band	UHF	VHF-H	VHF-L
MB (#7 pin)	8.3~9.3V	↔	↔
LB (#6 pin)	*0.7V	*3.7V	8.3~9.3V
HB (#5 pin)	0V	8.3~9.3V	0V
UB (#4 pin)	8.3~9.3V	0V	0V

* The voltage is not externally applied. The status is open circuit.

2) Adjustment of LLD coil (IFT203) and measurement of image frequency specification and output level

(1) Prepare and connect the measuring instrument as shown in Fig. 3.

(2) Disconnect the tuner pack output from the IF input with the test pattern.

(3) TV SG setting

Frequency : P:38.9MHz S:33.4MHz (invert mode)

Output level : 85dB μ

Image signal : Multi-burst and split color bar signal

Voice modulation : 1KHz 30% (15KHz•Dev) MONO

(4) Check the wave form in multi-burst signal as shown below with the oscilloscope.

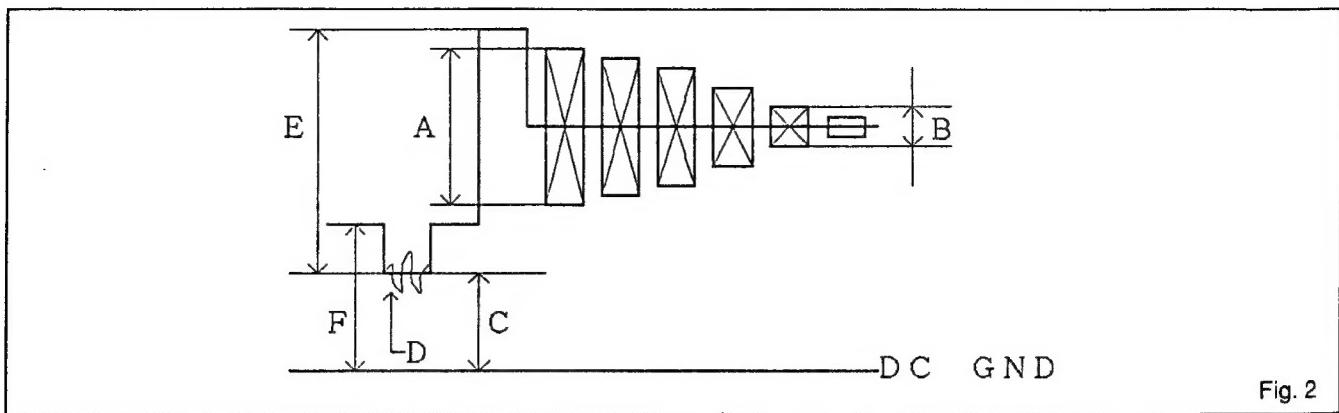


Fig. 2

- (5) Adjust the externally applied IF-AGC voltage to maintain voltage E in the figure at 1.5V.
- (6) Adjust the IFT 203 so that DC potential at C or F in the figure is minimum level.
If the wave form is disturbed due to low voltage at C, repeat adjustment in (5) and adjust the IFT203.
- (7) Check that there is no noise at H-SYNC (D).
- (8) Check that the ratio of 4.43 MHz (B) and 500 KHz (A) is in the following range. (measurement of frequency specification)
0.5/4.43MHz ••• -10±4dB
(Acceptable if A:B = 5:1 or more.)
- (9) Check that the image output is $1V \pm 0.2V_{p-p}$ for the split color bar signal.

Measuring point : No.10 pin of J801 at the power source

Measuring conditions : 75Ω at termination

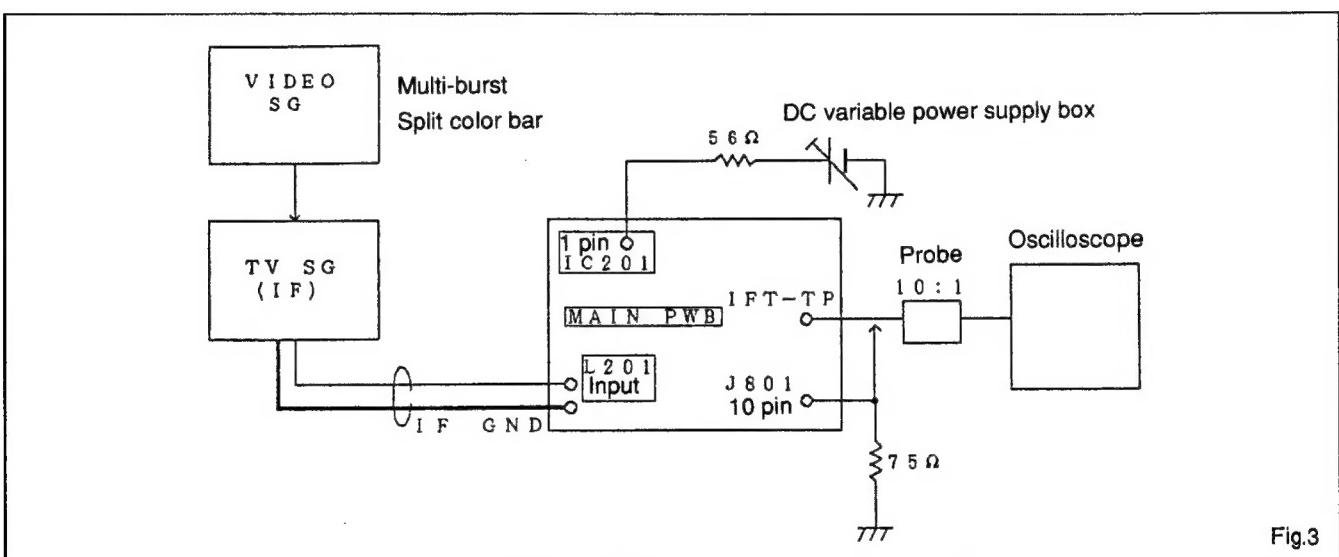


Fig.3

3) Adjustment of RF-AGC

(1) Prepare and connect the measuring instrument as shown in Fig. 4.

(2) Connect the tuner pack output to the IF input with the test pattern.

(3) TV SG setting

9 ch output level : $85dB\mu$

Image signal : Multi-burst signal

Voice modulation : 1KHz 30% (15KHz•Dev) MONO

(4) Adjust the AGC. VR (VR201) so that the spectrum analyzer indication level is $87 dB\mu$.

* For your information, set values of the spectrum analyzer are shown below. (Use the FET probe for measurement.)

RES-BW 300KHz

V-BW 300KHz

f₀ = 38.9MHz

f span = 10MHz

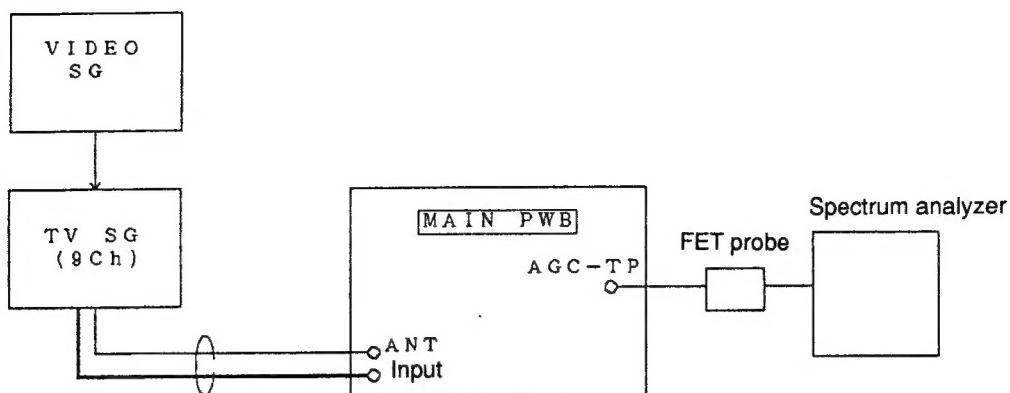


Fig.4

4. Adjustment of voice

1) Adjustment of soft mute.

(1) Prepare and connect the measuring instrument as shown in Fig. 5.

(2) TV SG setting

9 ch output level : 65dB μ

Image signal : Split color bar signal

Voice modulation : 1KHz 30% (15KHz•Dev) MONO

(3) Receive the TV voice on the FM radio (88.3 MHz or 88.7 MHz). Adjust the sound volume so that it may not clip. Use this point as the 0 dB reference point.

(4) When the RF input is 12 dB μ , adjust the VR202 so that the voice output level is lowered by 10 dB.

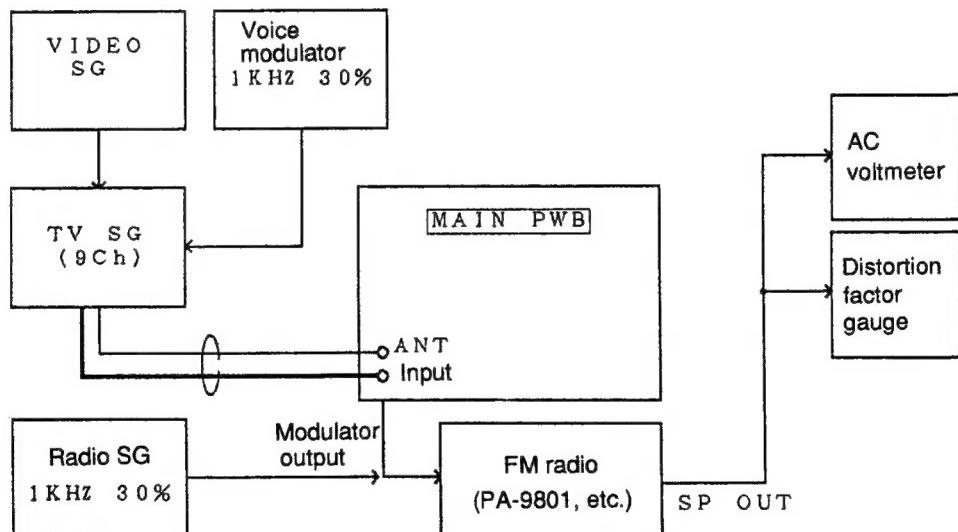


Fig. 5

2) Adjustment of voice output and measurement of voice frequency specification and distortion factor

(1) Prepare and connect the measuring instrument as shown in Fig. 5.

(2) TV SG setting

9 ch output level : 65dB μ

Image signal : Split color bar signal

Voice modulation : 1KHz 30% (15KHz•Dev) MONO

(3) Radio SG setting

RF frequency : 88.3 MHz or 88.7 MHz

RF output : 65dB μ

Voice modulation : 1KHz 30% (22.5KHz•Dev) MONO

(4) Adjust the VR 601 (L) and VR602 (R) so that both L and R TV voice outputs are $+1 \text{ dB} \pm 2 \text{ dB}$ to radio voice outputs.

(5) Check that the voice frequency specification and distortion factor meet the following values.

Frequency specification 70Hz $-2 \pm 3 \text{ dB}$

 1 KHz 0 dB (standard)

 7KHz $-14 \pm 4 \text{ dB}$

Distortion factor : 6% or less (20 KHz, LPF or DIN-AUDIO is used.)

5. Adjustment of OSD indication position

1) Adjust the OSD with the trimmer capacitor (TC 501).

(1) Prepare and connect the measuring instrument as shown in Fig. 5.

(2) TV SG setting

9 ch output level : 65dB μ

Image signal : Split color bar signal

Voice modulation : 1KHz 30% (15KHz•Dev) MONO

(3) Adjust the TC 501 so that receive channel is indicated in the center of blue bar in the split color bar as shown in Fig. 6.

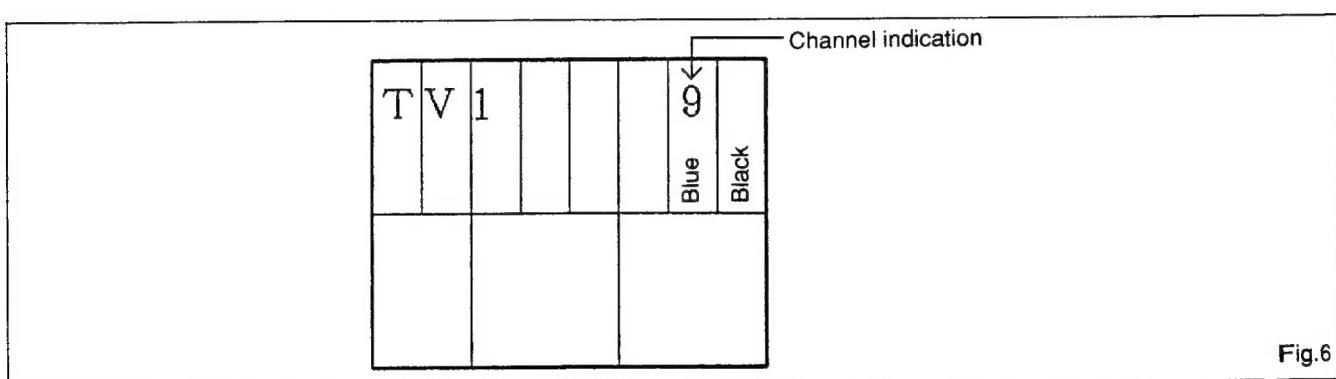


Fig.6

6. Adjustment of signal processor

1) Adjustment of gamma 1, gamma 2, contrast and peak limiter

(1) Input the image signal (10 step staircase, APL=50%) into the external video input terminal.

(2) Connect the oscilloscope to test point G. OUT and check the wave form as shown below.

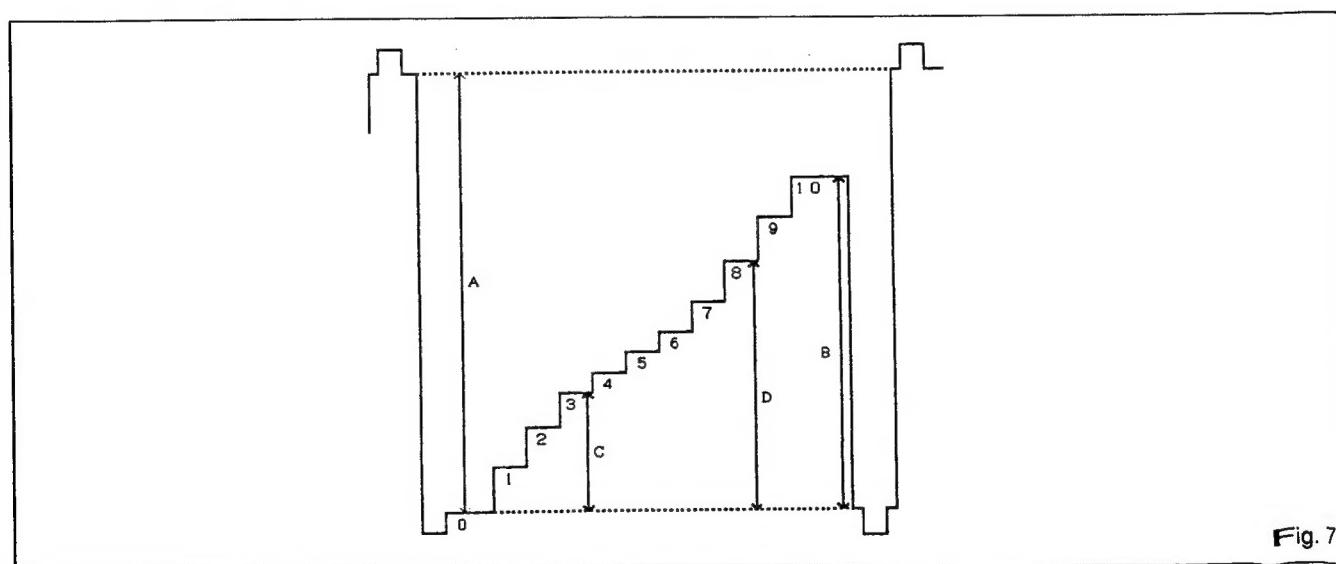


Fig. 7

(3) Adjust brightness (with UP or DOWN button) so that black - black level in Fig. 7 is 6V.

(4) Adjust the contrast VR (VR 408) so that voltage B at the 10th step of 10 step staircase is 4V.

(5) Adjust the gamma 1 VR (VR 404) so that voltage C at the 3rd step is 2V.

(6) Check that voltage B is 4V and that voltage C is 2V.

- (7) Set the APL of input image signal to 10%.
- (8) Adjust the peak limiter VR (VR 405) so that voltage B is 5.4V.
- (9) Adjust the gamma 1 VR (VR 404) so that voltage C is 2.4V.
- (10) Adjust the gamma 2VR (VR 403) so that voltage D at the 8th step is 4.6V.
- (11) Check that voltage B is 5.4V, that voltage C is 2.4V and that voltage D is 4.6V.

2) Adjustment of white balance

- (1) Input the image signal (10 step staircase, APL=50%) into the external video input terminal.
- (2) Using 2-phenomena oscilloscope, check wave forms at test points G. OUT and R. OUT simultaneously.
(Check G. OUT in CH-1 and R. OUT in CH-2. Invert the CH-2 with the invert switch on the oscilloscope and check the wave form in ADD-mode.)

Wave form in the oscilloscope

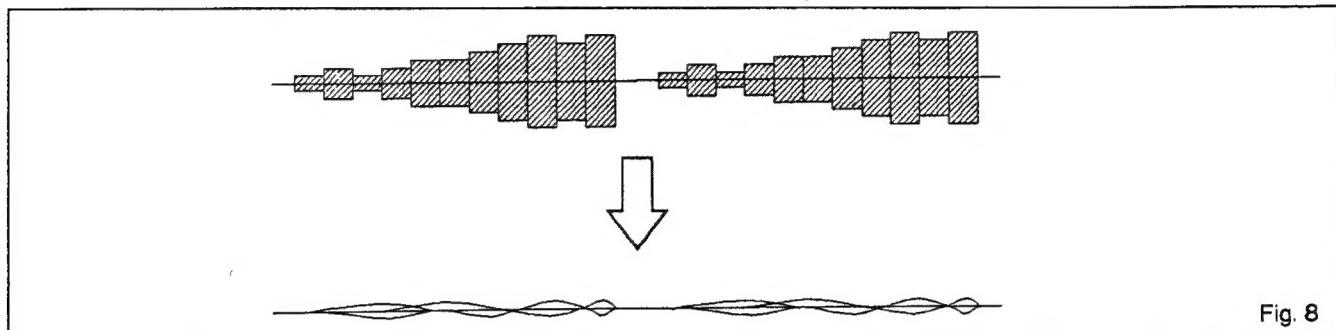


Fig. 8

- (3) Adjust the sub-bright R-VR (VR 402) and the sub-contrast R-VR (VR 407) so that the wave form is linear as shown above.
- (4) Check the wave form at test point B. OUT in CH-2 and the wave form at test point G. OUT in CH-1 simultaneously. Adjust the sub-bright B-VR (VR 401) and the sub-contrast B-VR (VR 406) so that the wave form is linear as shown above.

3) Adjustment of burst cleaning coil

- (1) Input the image signal (standard color bar signal) into the external video input terminal.
- (2) Check test point R. OUT and test point FRP simultaneously with the oscilloscope.
- (3) Apply trigger to FRP to check the wave form shown below.

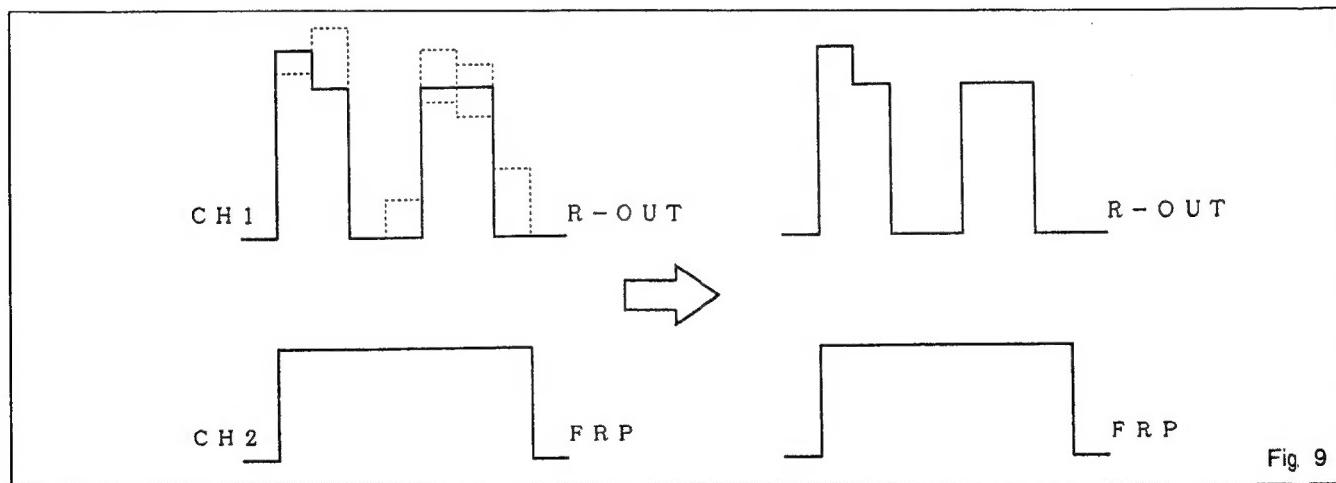
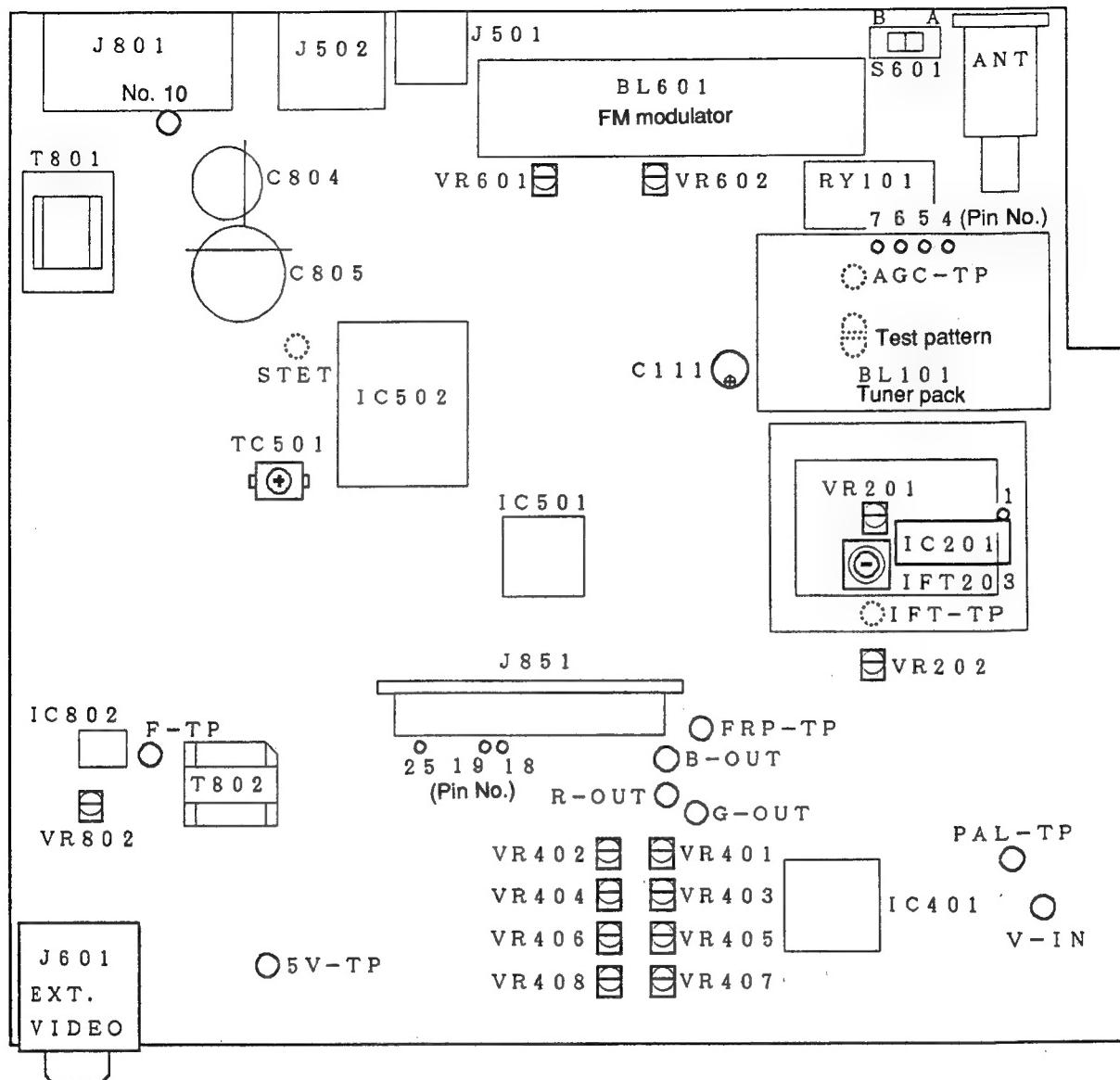


Fig. 9

- (4) Turn and adjust the burst cleaning coil (L 404) so that the wave form deviation of R. OUT is minimized.

Test Point



*AGC-TP, test pattern and IFT-TP in the figure are present on the soldering surface.

PARTS LIST

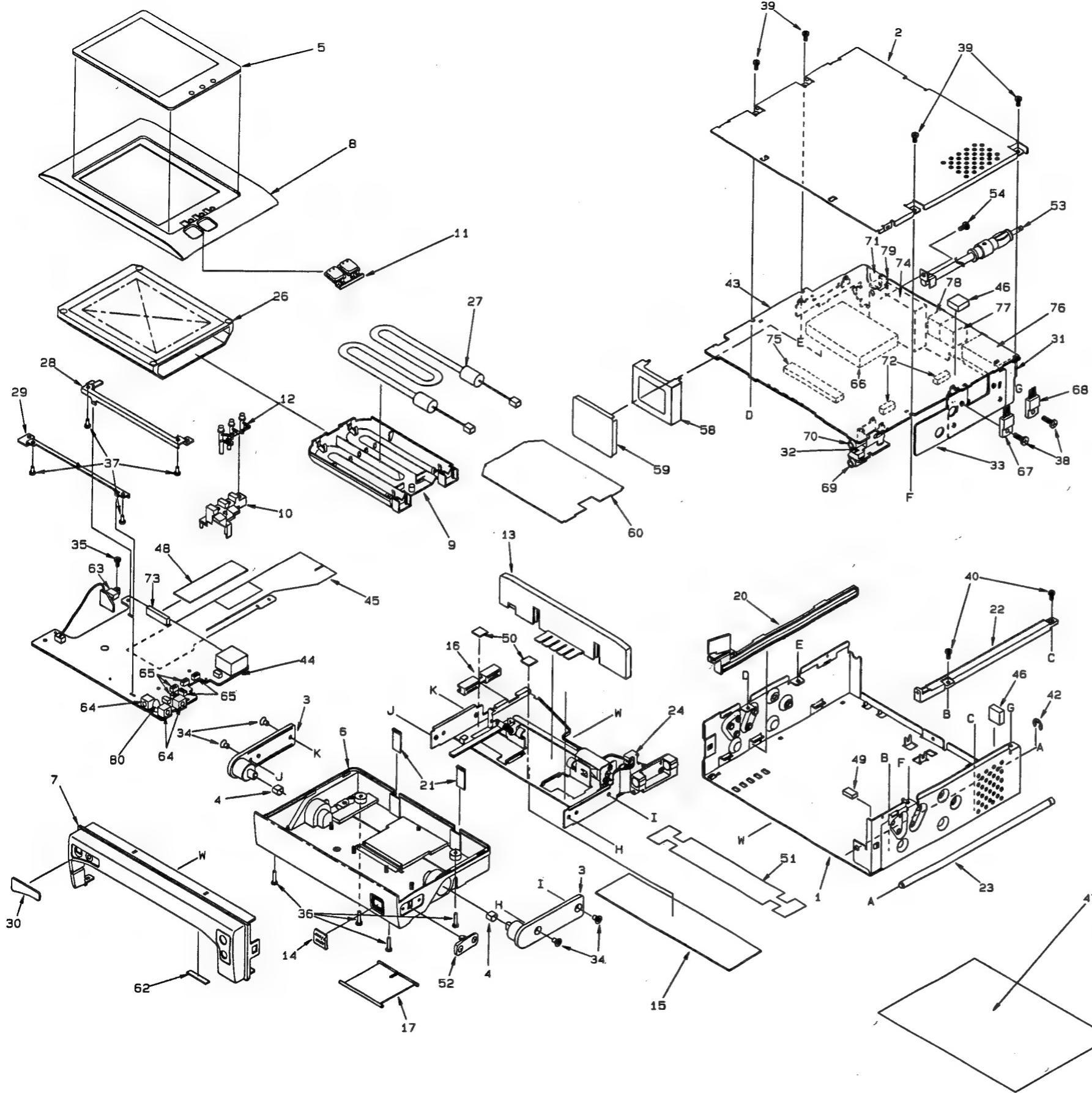
MAIN PWB

REF No.	PART No.	DESSCRIPTION	REF No.	PART No.	DESSCRIPTION	REF No.	PART No.	DESSCRIPTION
BL 601	060-7000-00	RF MODULATOR	C 403	183-1063-31	16V10uF	C 601	176-5091-00	5pF CH
C 101	178-1032-78	0.01uF	C 404	178-1032-78	0.01uF	C 602	178-1042-78	0.1uF
C 102	178-1032-78	0.01uF	C 405	178-1032-78	0.01uF	C 603	178-1032-78	0.01uF
C 103	178-1032-78	0.01uF	C 406	178-1032-78	0.01uF	C 604	183-1063-31	16V10uF
C 105	178-1032-78	0.01uF	C 407	178-1032-78	0.01uF	C 605	183-1063-31	16V10uF
C 106	178-1032-78	0.01uF	C 408	178-1032-78	0.01uF	C 606	178-2222-78	2200pF
C 107	183-4763-31	16V47uF	C 409	178-1032-78	0.01uF	C 607	183-1063-31	16V10uF
C 108	172-4741-11	0.47uF	C 410	178-1032-78	0.01uF	C 608	178-2222-78	2200pF
C 109	178-1032-78	0.01uF	C 411	183-1073-21	10V100uF	C 609	178-2232-78	0.022uF
C 110	178-3312-78	330pF	C 412	178-1032-78	0.01uF	C 701	183-1063-31	16V10uF
C 111	183-2263-52	35V 22uF	C 413	183-1073-21	10V100uF	C 702	183-1063-31	16V10uF
C 112	178-1022-78	1000pF	C 414	183-4743-61	50V0.47uF	C 703	183-1063-31	16V10uF
C 113	178-1032-78	0.01uF	C 415	178-1032-78	0.01uF	C 704	183-1063-31	16V10uF
C 114	178-1042-78	0.1uF	C 416	178-1032-78	0.01uF	C 705	183-1063-31	16V10uF
C 115	178-1022-78	1000pF	C 417	178-4732-78	0.047uF	C 706	183-4763-31	16V47uF
C 116	176-1007-00	10pF CH	C 418	178-1032-78	0.01uF	C 707	183-1063-31	16V10uF
C 117	178-1032-78	0.01uF	C 419	178-1032-78	0.01uF	C 708	178-1542-78	0.15uF
C 118	178-1022-78	1000pF	C 420	176-1511-00	150pF	C 709	178-1542-78	0.15uF
C 201	176-1007-00	10pF CH	C 422	176-1201-00	12pF CH	C 710	176-1811-00	180pF CH
C 202	178-1032-78	0.01uF	C 423	178-1032-78	0.01uF	C 711	176-1811-00	180pF CH
C 203	178-1032-78	0.01uF	C 424	183-1053-61	50V1uF	C 801	183-4753-51	35V4.7uF
C 204	183-4753-51	35V4.7uF	C 425	178-1532-78	0.015uF	C 802	183-4763-31	16V47uF
C 205	178-1032-78	0.01uF	C 426	176-5601-00	56pF CH	C 803	183-1063-51	35V10uF
C 206	182-1073-33	16V 100uF	C 427	178-2222-78	2200pF	C 804	184-1083-32	16V1000uF
C 207	178-1032-78	0.01uF	C 428	178-1032-78	0.01uF	C 805	184-4783-12	6.3V 4700uF
C 208	178-1032-78	0.01uF	C 429	178-1032-78	0.01uF	C 806	178-1042-78	0.1uF
C 209	178-1032-78	0.01uF	C 430	178-1032-78	0.01uF	C 807	183-1073-21	10V100uF
C 210	183-4743-61	50V0.47uF	C 431	178-1032-78	0.01uF	C 808	183-4763-31	16V47uF
C 211	178-1032-78	0.01uF	C 432	178-1032-78	0.01uF	C 809	183-4753-51	35V4.7uF
C 212	178-1032-78	0.01uF	C 433	178-6812-78	680pF	C 810	176-1021-00	1000pF CH
C 213	176-3301-00	33pF CH	C 434	183-1073-21	10V100uF	C 811	183-1073-21	10V100uF
C 214	178-1032-78	0.01uF	C 435	178-1032-78	0.01uF	C 812	178-2222-78	2200pF
C 215	183-1063-31	16V10uF	C 436	178-1042-78	0.1uF	C 813	178-3312-78	330pF
C 216	178-1032-78	0.01uF	C 437	178-1042-78	0.1uF	C 814	178-3312-78	330pF
C 217	178-2232-78	0.022uF	C 438	178-1042-78	0.1uF	C 815	184-2273-32	16V220uF
C 218	178-2232-78	0.022uF	C 439	178-1042-78	0.1uF	C 816	043-0265-01	100V 100pF
C 219	184-4773-21	10V 470uF	C 440	183-1053-61	50V1uF	C 817	042-0470-05	35V12uF
C 220	183-4753-51	35V4.7uF	C 441	178-2232-78	0.022uF	C 818	042-0478-00	6.3V220uF
C 221	178-1022-78	1000pF	C 501	183-4763-11	6.3V47uF	C 819	183-1073-12	6.3V100uF
C 222	178-1022-78	1000pF	C 502	178-2232-78	0.022uF	C 820	042-0470-05	35V12uF
C 223	176-1011-00	100pF CH	C 504	178-1032-78	0.01uF	C 821	183-1073-21	10V100uF
C 224	176-3301-00	33pF CH	C 507	178-1042-78	0.1uF	C 822	182-2263-62	50V 22uF
C 226	178-1042-78	0.1uF	C 508	178-1042-78	0.1uF	C 823	183-4763-31	16V47uF
C 227	178-4732-78	0.047uF	C 509	178-1032-78	0.01uF	C 824	176-1511-00	150pF
C 228	178-4732-78	0.047uF	C 510	183-4763-11	6.3V47uF	C 825	178-3312-78	330pF
C 229	178-1042-78	0.1uF	C 511	178-1022-78	1000pF	C 826	042-0470-05	35V12uF
C 230	178-2722-78	2700pF	C 512	178-1022-78	1000pF	C 830	183-1073-21	10V100uF
C 231	178-1032-78	0.01uF	C 513	178-1022-78	1000pF	C 851	183-4763-31	16V47uF
C 232	183-4763-31	16V47uF	C 514	176-1011-00	100pF CH	C 852	172-1041-10	0.1uF
C 233	183-4763-31	16V47uF	C 515	178-1032-78	0.01uF	D 101	001-0516-00	MA111
C 234	178-3912-78	390pF	C 516	183-4763-11	6.3V47uF	D 102	001-0516-00	MA111
C 235	178-2712-78	270pF	C 517	178-1032-78	0.01uF	D 103	001-0516-00	MA111
C 236	178-1022-78	1000pF	C 518	176-1201-00	12pF CH	D 104	001-0506-00	DAN202K
C 237	178-1022-78	1000pF	C 519	176-1201-00	12pF CH	D 105	001-0506-00	DAN202K
C 238	176-1011-00	100pF CH	C 520	178-1032-78	0.01uF	D 106	001-0506-00	DAN202K
C 239	178-2232-78	0.022uF	C 521	178-1022-78	1000pF	D 107	001-0583-13	MA8030
C 240	183-2263-31	16V22uF	C 522	178-1032-78	0.01uF	D 108	001-0516-00	MA111
C 241	183-1063-31	16V10uF	C 523	178-1042-78	0.1uF	D 201	001-0541-00	MA157
C 242	183-1063-31	16V10uF	C 524	176-3901-00	39pF CH	D 301	001-0367-00	1SS226
C 243	183-1063-31	16V10uF	C 525	176-3001-00	30pF CH	D 302	001-0367-00	1SS226
C 244	178-1032-78	0.01uF	C 529	178-1042-78	0.1uF	D 401	001-0516-00	MA111
C 245	172-2731-10	0.027uF	C 530	178-1042-78	0.1uF	D 503	001-0516-00	MA111
C 246	173-6821-11	680pF	C 531	178-1042-78	0.1uF	D 506	001-0516-00	MA111
C 247	172-1231-11	0.012uF	C 532	184-4773-22	10V470uF	D 507	001-0583-24	MA8082
C 248	183-1063-31	16V10uF	C 533	178-1042-78	0.1uF	D 508	001-0583-24	MA8082
C 249	173-8221-11	8200pF	C 534	178-1032-78	0.01uF	D 509	001-0583-24	MA8082
C 250	178-2222-78	2200pF	C 535	178-2232-78	0.022uF	D 801	001-0466-00	S5688B
C 251	183-4753-51	35V4.7uF	C 536	178-2232-78	0.022uF	D 802	001-0466-00	S5688B
C 252	176-1011-00	100pF CH	C 537	178-1032-78	0.01uF	D 803	001-0516-00	MA111
C 301	183-1063-31	16V10uF	C 538	178-1032-78	0.01uF	D 804	001-0583-23	MA8075
C 302	183-1063-31	16V10uF	C 539	178-1032-78	0.01uF	D 805	001-0334-30	RL202
C 303	183-1063-31	16V10uF	C 540	178-1032-78	0.01uF	D 806	001-0516-00	MA111
C 304	182-1073-33	16V 100uF	C 541	178-1032-78	0.01uF	D 807	001-0516-00	MA111
C 401	183-4753-51	35V4.7uF	C 542	183-4763-31	16V47uF	D 808	001-0516-00	MA111
C 402	183-1063-31	16V10uF	C 543	178-5612-78	560pF	D 809	001-0516-00	MA111

◎ SW PWB

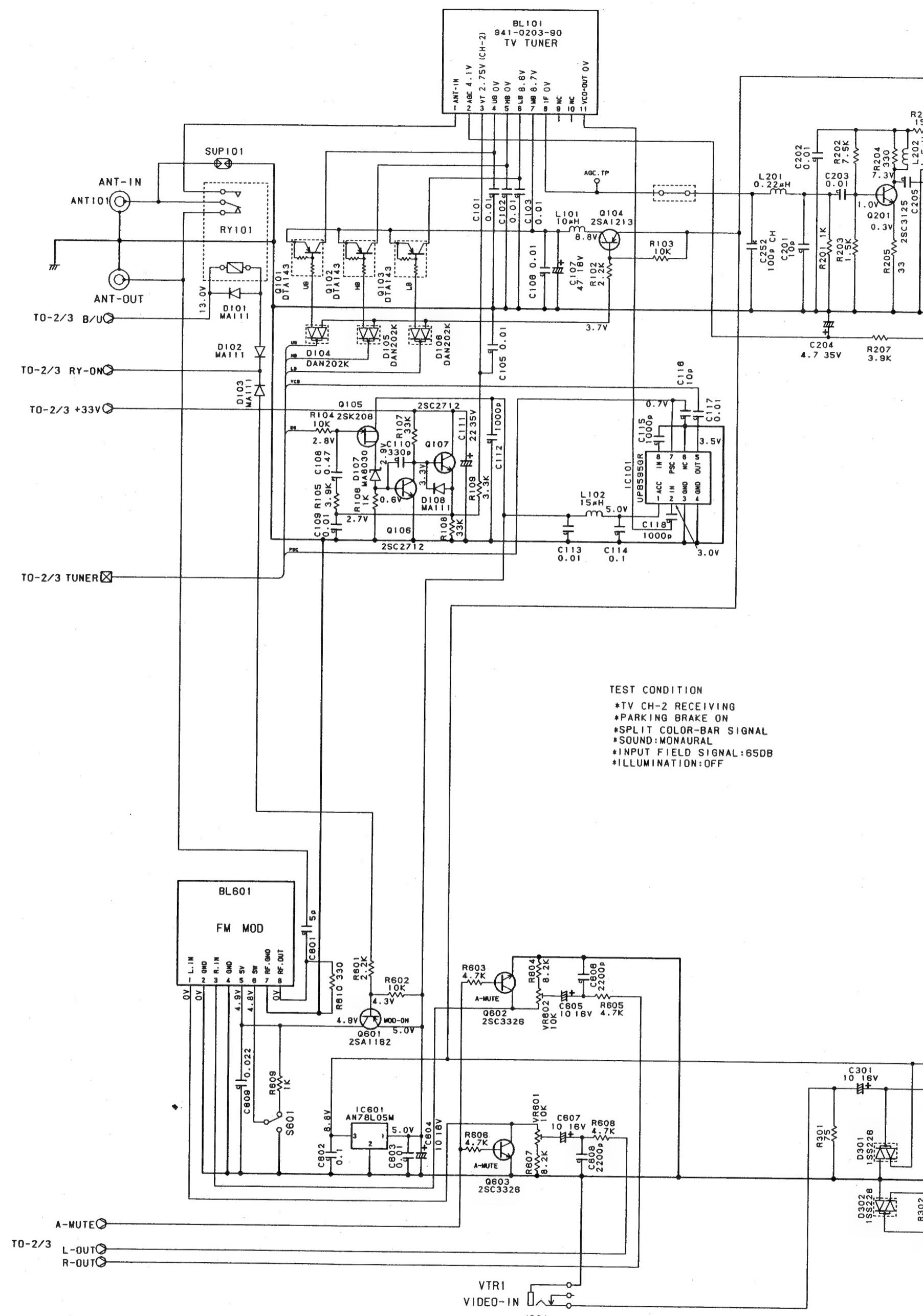
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D 810	001-0528-36	MA8062H	Q 508	125-2020-03	DTC124EK	R 247	117-1801-10	1/10W 180HM	R 525	117-1021-10	1/10W 1kOHM	R 807	117-1021-10	1/10W 1kOHM
D 811	001-0464-00	1GWJ42	Q 509	102-2712-00	2SC2712	R 248	117-1811-10	1/10W 180OHM	R 526	117-1021-10	1/10W 1kOHM	R 808	117-3921-10	1/10W 3.9kOHM
D 812	001-0464-00	1GWJ42	Q 510	102-2712-00	2SC2712	R 249	117-1811-10	1/10W 180OHM	R 527	117-1021-10	1/10W 1kOHM	R 809	117-2221-10	1/10W 2.2kOHM
D 814	001-0330-00	ISS119	Q 601	100-1162-00	2SA1162	R 250	117-4741-10	1/10W 470kOHM	R 528	117-1031-10	1/10W 10kOHM	R 810	117-6841-10	1/10W 680kOHM
D 815	001-0376-52	MTZJ10D	Q 602	102-3326-00	2SC3326	R 251	117-2221-10	1/10W 2.2kOHM	R 529	117-1031-10	1/10W 10kOHM	R 811	117-1841-10	1/10W 180kOHM
D 816	001-0589-00	ISS145	Q 603	102-3326-00	2SC3326	R 252	117-2221-10	1/10W 2.2kOHM	R 530	117-2231-10	1/10W 22kOHM	R 812	117-3331-10	1/10W 33kOHM
D 817	001-0528-87	MA8330-M	Q 801	102-2712-00	2SC2712	R 253	117-2221-10	1/10W 2.2kOHM	R 531	117-2231-10	1/10W 22kOHM	R 813	117-1001-10	1/10W 100HM
D 818	001-0516-00	MA111	Q 802	125-0024-03	MUN2112	R 254	117-4721-10	1/10W 4.7kOHM	R 532	117-1031-10	1/10W 10kOHM	R 814	117-3341-10	1/10W 330kOHM
D 819	001-0330-00	ISS119	Q 803	100-1162-00	2SA1162	R 301	117-7501-10	1/10W 750HM	R 533	117-3321-10	1/10W 3.3kOHM	R 815	117-2221-10	1/10W 2.2kOHM
D 820	001-0516-00	MA111	Q 804	125-2020-03	DTC124EK	R 302	117-7501-10	1/10W 750HM	R 534	117-1021-10	1/10W 1kOHM	R 816	117-2231-10	1/10W 22kOHM
D 851	001-0376-51	MTZJ10C	Q 805	102-3668-00	2SC3668	R 401	117-2231-10	1/10W 22kOHM	R 535	117-1021-10	1/10W 1kOHM	R 817	117-3311-10	1/10W 330HM
IC 101	051-6200-05	uPB595GR	Q 806	102-3668-00	2SC3668	R 402	117-2231-10	1/10W 22kOHM	R 536	117-1021-10	1/10W 1kOHM	R 818	117-1511-10	1/10W 150HM
IC 201	051-1755-10	TA8700AN	Q 807	125-0024-03	MUN2112	R 403	117-2731-10	1/10W 27kOHM	R 537	117-1021-10	1/10W 1kOHM	R 819	117-5621-10	1/10W 5.6kOHM
IC 202	051-0987-01	AN7463S	Q 808	125-2020-03	DTC124EK	R 404	117-3331-10	1/10W 33kOHM	R 538	117-1031-10	1/10W 10kOHM	R 820	118-1021-10	1/2W 1kOHM
IC 203	051-1282-00	NJM4565M-D	Q 809	100-1213-00	2SA1213	R 405	117-1531-10	1/10W 15kOHM	R 539	117-2231-10	1/10W 22kOHM	R 822	118-2292-10	1/2W 2.2kOHM
IC 301	051-1754-00	NJM2273	Q 810	125-2020-03	DTC124EK	R 406	117-4731-10	1/10W 47kOHM	R 540	117-2231-10	1/10W 22kOHM	R 823	117-5621-10	1/10W 5.6kOHM
IC 401	051-5304-00	IR3Y16	Q 811	125-2020-03	DTC124EK	R 407	117-2731-10	1/10W 27kOHM	R 541	117-1021-10	1/10W 1kOHM	R 824	118-1021-10	1/2W 1kOHM
IC 501	052-6009-10	uPD75004GB-F90-3B4	Q 813	100-1213-00	2SA1213	R 408	117-2731-10	1/10W 27kOHM	R 542	117-1021-10	1/10W 1kOHM	R 825	117-5611-10	1/10W 560OHM
IC 502	052-6008-10	uPD17068GF-E22-3BA	Q 814	125-2020-03	DTC124EK	R 409	117-6821-10	1/10W 6.8kOHM	R 543	117-1021-10	1/10W 1kOHM	R 827	117-3311-10	1/10W 330HM
IC 503	051-9403-05	24C01A	Q 815	125-2020-03	DTC124EK	R 410	117-3321-10	1/10W 3.3kOHM	R 544	117-1031-10	1/10W 10kOHM	R 828	117-4711-10	1/10W 470HM
IC 504	051-0173-05	TC4050BF	Q 816	103-1266-00	2SD1266	R 411	117-3931-10	1/10W 39kOHM	R 545	117-1031-10	1/10W 10kOHM	R 829	117-4721-10	1/10W 4.7kOHM
IC 505	051-0172-05	TC4011BF	R 102	117-2221-10	1/10W 2.2kOHM	R 412	117-3931-10	1/10W 39kOHM	R 546	117-1021-10	1/10W 1kOHM	R 851	117-1021-10	1/10W 1kOHM
IC 506	051-0142-05	TC4013BF	R 103	117-1031-10	1/10W 10kOHM	R 413	117-3931-10	1/10W 39kOHM	R 547	117-1021-10	1/10W 1kOHM	R 852	114-2291-11	1/2W 2.2kOHM
IC 507	051-7400-06	HD74LS07FP	R 104	117-1031-10	1/10W 10kOHM	R 414	117-3931-10	1/10W 39kOHM	R 548	117-1021-10	1/10W 1kOHM	RY 101	014-0555-00	
IC 601	051-1924-00	AN78L05M	R 105	117-3921-10	1/10W 3.9kOHM	R 415	117-4731-10	1/10W 47kOHM	R 549	117-1021-10	1/10W 1kOHM	S 501	013-3880-02	
IC 701	051-0410-05	TC4052BF	R 106	117-1021-10	1/10W 1kOHM	R 416	117-2731-10	1/10W 27kOHM	R 550	117-1021-10	1/10W 1kOHM	S 502	013-3880-02	
IC 702	051-1292-00	NJM4565M-D	R 107	117-3331-10	1/10W 33kOHM	R 417	117-2731-10	1/10W 27kOHM	R 551	117-1021-10	1/10W 1kOHM	S 601	013-5002-00	
IC 801	051-1788-00	PQ09RA11	R 108	117-3331-10	1/10W 33kOHM	R 418	117-3931-10	1/10W 39kOHM	R 552	117-1021-10	1/10W 1kOHM	SUP 101	060-0122-20	DSP-141N-S00B
IC 802	051-1619-00	FA7610N	R 109	117-3321-10	1/10W 3.3kOHM	R 419	117-2731-10	1/10W 27kOHM	R 553	117-1521-10	1/10W 1.5kOHM	T 801	009-0621-01	
IC 851	051-1014-10	TA7291S	R 201	117-1021-10	1/10W 1kOHM	R 420	117-3931-10	1/10W 39kOHM	R 554	117-1521-10	1/10W 1.5kOHM	T 802	007-1120-00	
IFT 201	060-2200-00	SAF38.9MHz	R 202	117-7521-10	1/10W 7.5kOHM	R 421	117-2731-10	1/10W 27kOHM	R 555	117-1521-10	1/10W 1.5kOHM	TC 501	004-1583-13	30pF
IFT 202	060-2000-00	CDSH5.5MC	R 203	117-1521-10	1/10W 1.5kOHM	R 422	117-3931-10	1/10W 39kOHM	R 556	117-2231-10	1/10W 22kOHM	VR 201	012-5123-06	10kOHM
IFT 203	005-5005-00		R 204	117-3311-10	1/10W 330HM	R 423	117-2731-10	1/10W 27kOHM	R 557	117-2231-10	1/10W 22kOHM	VR 202	012-5123-06	10kOHM
IFT 204	060-2606-00	TPS5.5MB	R 205	117-3301-10	1/10W 330HM	R 424	117-3931-10	1/10W 39kOHM	R 558	117-4721-10	1/10W 4.7kOHM	VR 401	012-5123-07	22kOHM
IFT 205	060-2606-00	TPS5.5MB	R 206	117-1511-10	1/10W 150OHM	R 425	117-3311-10	1/10W 330HM	R 559	117-4721-10	1/10W 4.7kOHM	VR 402	012-5123-07	22kOHM
IFT 206	005-2003-00	SFSL5.5MC	R 207	117-3921-10	1/10W 3.9kOHM	R 426	117-3311-10	1/10W 330HM	R 560	117-4721-10	1/10W 4.7kOHM	VR 403	012-5123-08	33kOHM
IR 502	060-4001-00	RS-51	R 208	117-1021-10	1/10W 1kOHM	R 427	117-1011-10	1/10W 1000HM	R 561</					

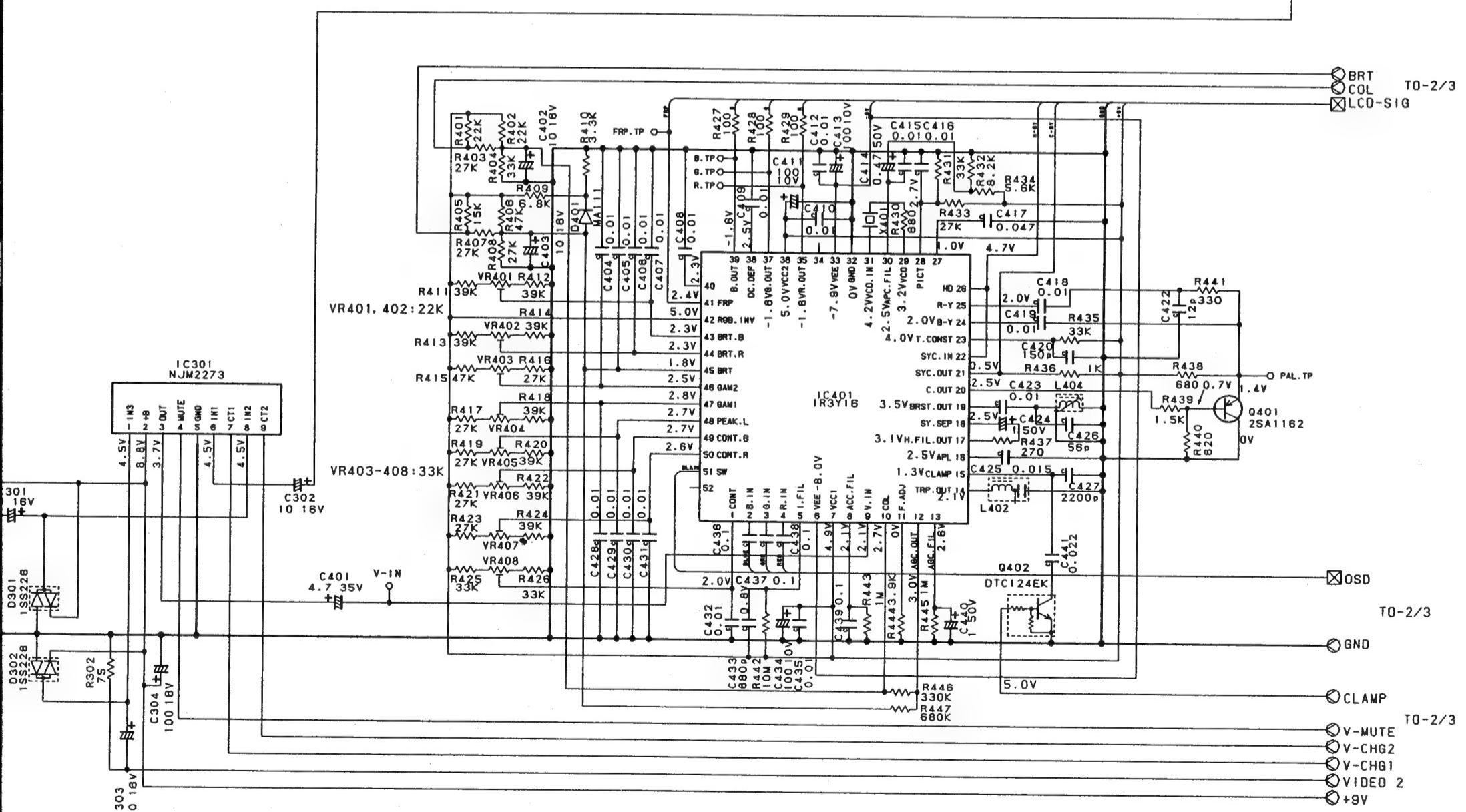
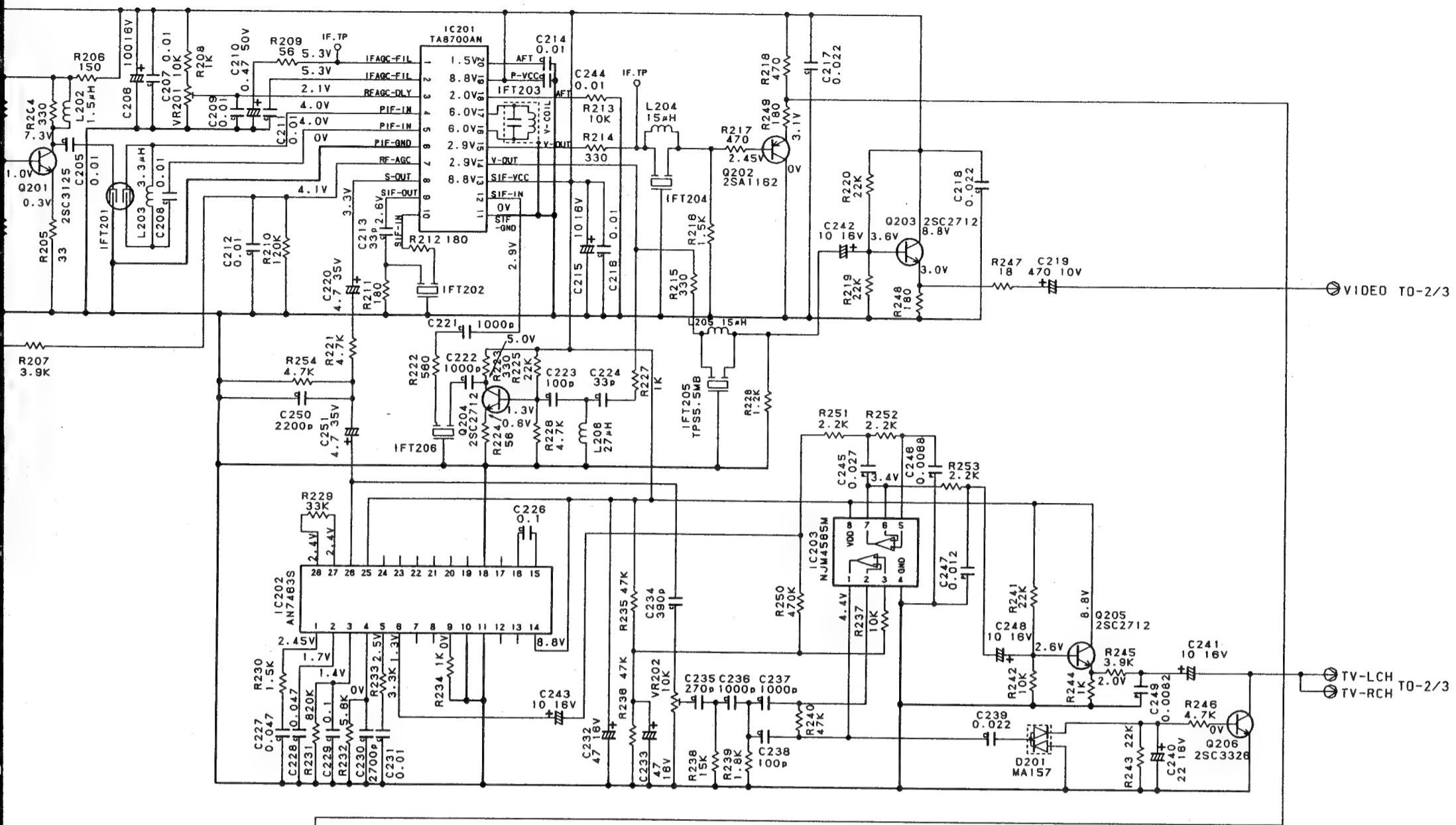
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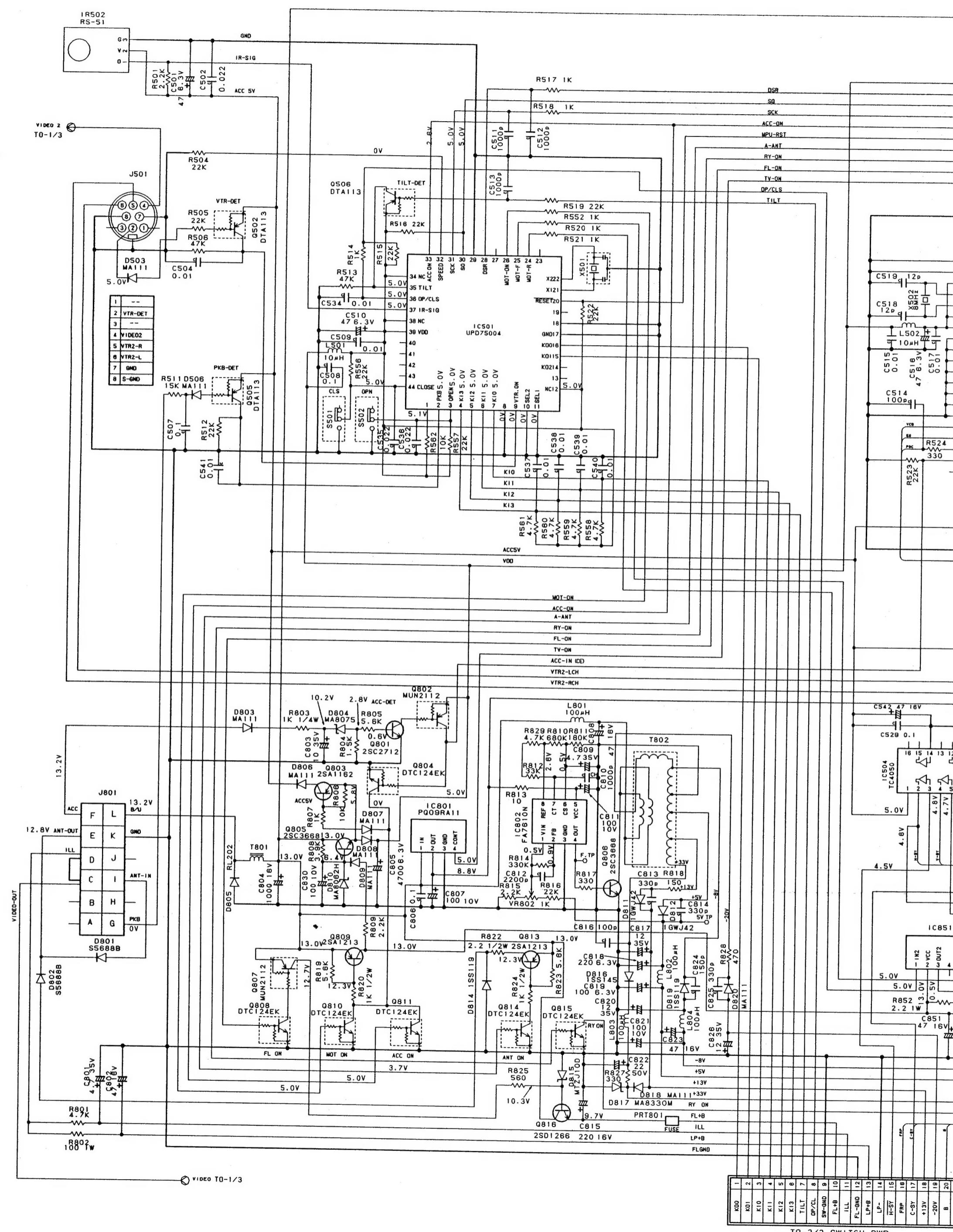
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1	311-1570-30	LOWER CASE	1
2	310-1515-03	UPPER CASE	1
3	947-0345-00	TORQUE BUSH	2
4	750-3053-00	D-SPRING	2
5	373-0745-40	LCD COVER	1
6	377-0198-13	DIAL SUPPORT	1
7	370-5472-40	ESCUcheon	1
8	373-0742-00	DIAL COVER	1
9	374-0919-00	BACK PLATE	1
10	335-4610-00	ILLUMI PLATE	1
11	382-3529-10	BUTTON A	1
12	382-3531-10	BUTTON B	1
13	335-4609-00	HOLD PLATE COVER	1
14	382-3527-00	OPEN BUTTON	1
15	347-3894-00	SHADE	1
16	335-4381-00	SLIDER	1
17	335-4608-00	FPC COVER	1
20	335-4383-01	SLIDE HOLDER	1
21	335-4384-00	LOCK	2
22	335-3854-01	RACK	1
23	612-0183-01	SHAFT	1
24	948-0319-02	HOLD PLATE ASSY	1
24-1	020-1501-01	DC-MOTOR	1
24-2	613-0309-00	WORM GEAR	1
26	379-0434-00	INDICATOR(LCD)	1
27	060-0353-00	GAS FILLED TUBE(BACK LIGHT)	1
28	331-0308-00	LCD PLATE A	1
29	331-0309-00	LCD PLATE B	1
30	373-0743-20	DIAL COVER A	1
31	331-0037-05	CONNECTOR PLATE	1
32	331-0307-00	JACK HOLDER	1
33	313-1525-00	HEAT SINK	1
34	716-1598-00	SCREW	4
35	702-2006-81	TAP SCREW	1
36	702-2010-87	TAP SCREW(M2X10)	4
37	702-2605-81	TAP SCREW(M2.6X5)	4
38	714-3010-81	MACHINE SCREW	2
39	716-0878-00	IT-SCREW	4
40	714-2605-81	MACHINE SCREW	2
42	743-4000-10	E-RING	1
43	039-0513-00	MAIN PWB	1
44	039-0082-02	SWITCH PWB	1
45	039-0066-00	FLEX PWB	1
46	345-5095-00	RUBBER SPACER	2
47	286-8417-00	SETPLATE	1
48	039-0067-00	FLEX PWB(LCD)	1
49	345-5096-00	RUBBER SPACER	1
51	353-0427-00	SHADE B	1
52	382-3528-00	UP DOWN BUTTON	1
53	855-6310-01	ANTENNA CORD	1
54	731-3006-81	TAPTIGHT	1
58	331-0042-00	SHIELD CASE	1
59	331-0041-00	SHIELD COVER	1
60	347-3895-00	SPACER PLATE	1
62	347-3309-00	INSULATOR (SHADE)	1
63	013-3974-00	SWITCH	1
64	013-3932-00	SWITCH	3
65	013-3741-11	SWITCH	5
66	941-0203-90	TUNER PACK	1
67	103-1266-00	TRANSISTOR	1
68	051-1788-00	IC	1
69	075-0339-00	JACK	1
70	075-0324-01	JACK	1
71	092-0612-03	ANTENNA RECEPTACLE	1
72	013-3880-02	SWITCH	2
73	074-1042-16	OUTLET SOCKET(16P)	1
74	060-7000-00	RF-MODULATOR	1
75	074-0731-28	OUTLET SOCKET(28P)	1
76	074-0884-00	OUTLET SOCKET(12P)	1
77	074-1022-01	OUTLET SOCKET(13P)	1
78	074-1030-00	OUTLET SOCKET(VIDEO)	1
79	013-5002-00	SWITCH	1
80	017-0422-02	PILOT LAMP	1

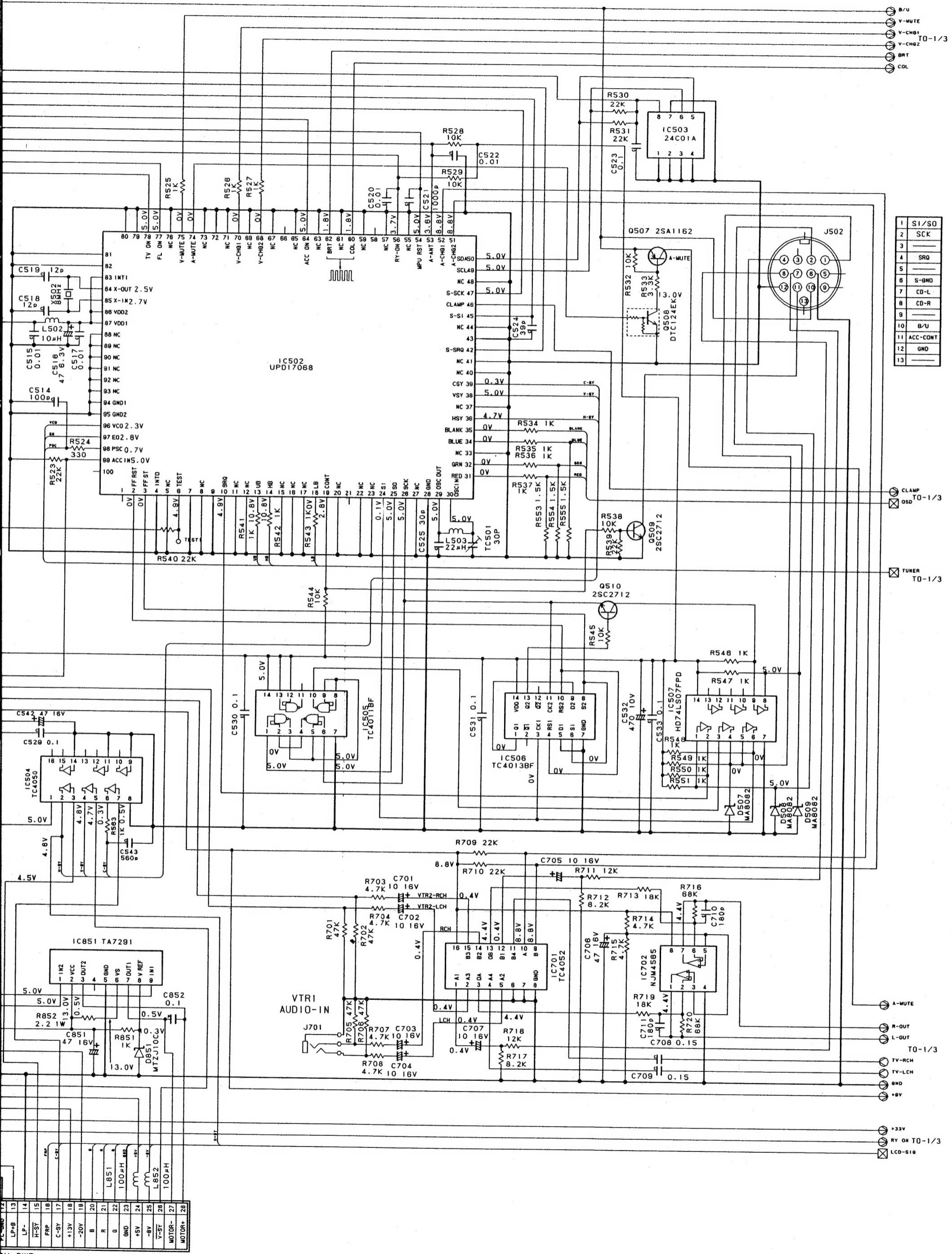
■ CIRCUIT DIAGRAM 1/3

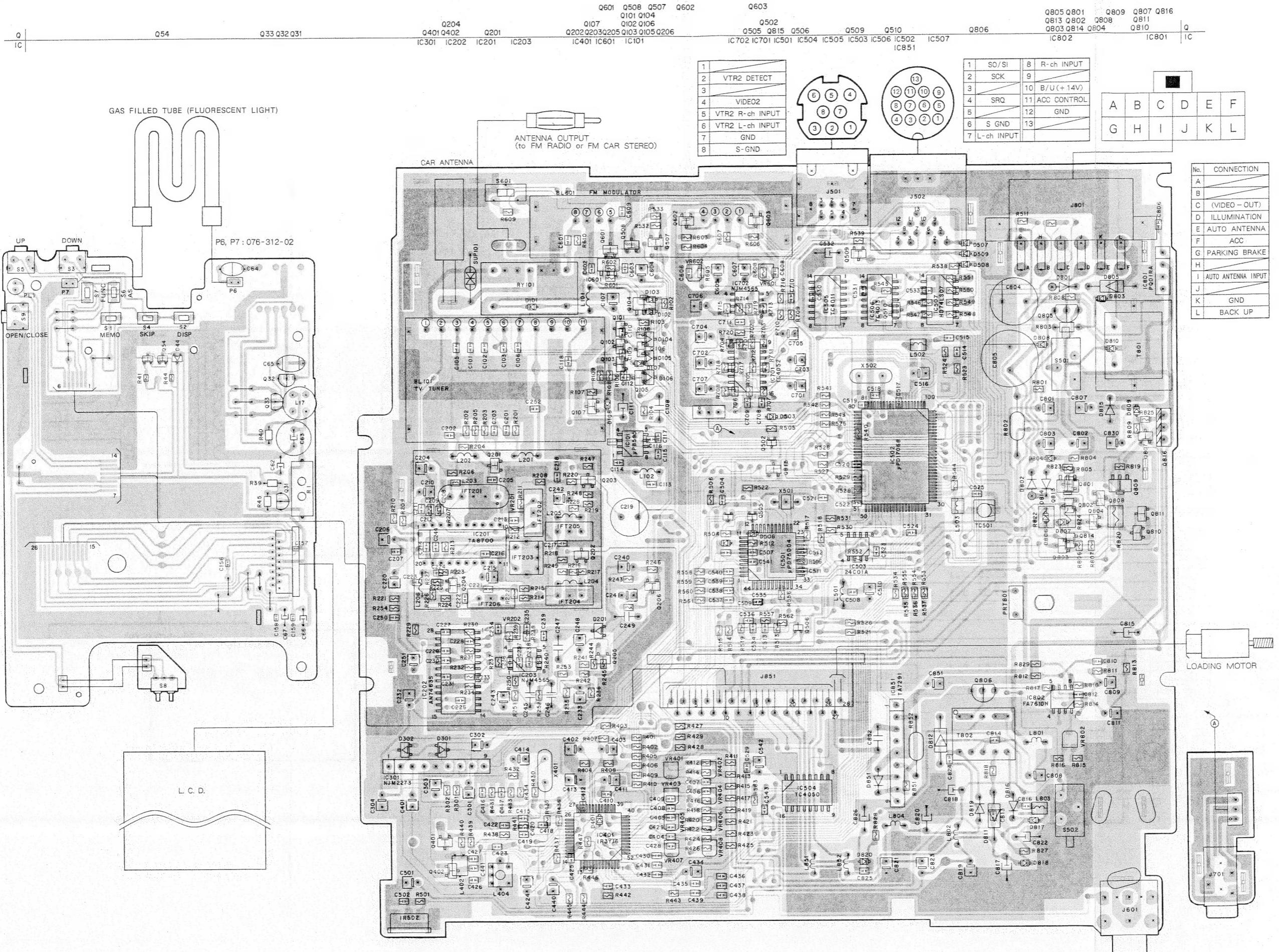




CIRCUIT DIAGRAM 2/3







■ CIRCUIT DIAGRAM 3/3

